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Compact drive assembly with multi-plate coupling

Claims

1. A drive assembly for being used in the driveline of a motor vehicle with an axle which is drivable when required, comprising

a drive (2) with a drive housing (5) which comprises a sleeve-shaped projection (10) in which the drive input shaft (9) is rotatably supported,

a multi-plate coupling which is arranged ahead of the drive (2), which multi-plate coupling is rotatably supported in a coupling housing (8) connected to the drive housing (5) and which, furthermore, comprises a coupling input part (22) for introducing torque and a coupling output part (26) connected to the drive input shaft (9) in a rotationally fast way,

wherein the multi-plate coupling (3) is arranged coaxially externally relative to the sleeve-shaped projection (10) and at least partially axially overlaps said sleeve-shaped projection (10).
2. A drive assembly according to claim 1,

characterised in

that the multi-plate coupling (3) comprises a set of coupling plates (16, 18) which are provided for the transmission of torque and which, axially alternately, are connected to the coupling input part (22) and to the coupling output part (26) in a rotationally fast way, wherein the set of coupling plates (16, 18) at least partially axially overlaps the sleeve-shaped projection (10).

3. A drive assembly according to claim 1 or 2,

characterised in

that the multi-plate coupling (3) comprises a carrier (15) firmly connected to the coupling input part (22) and a hub (17) firmly connected to the coupling output part (26), wherein outer plates (16) of the set of coupling plates are connected in a rotationally fast way to the carrier (15) and inner plates (18) of the set to the hub (17).

4. A drive assembly according to any one of claims 1 to 3,

characterised in

that the drive input shaft (9) is supported by two axially spaced rolling contact bearings (12, 13) in the sleeve-shaped projection (10) of the drive housing (5), wherein the set of coupling plates (16, 18) axially overlaps at least one of the rolling contact bearings (12).

5. A drive assembly according to any one of claims 1 to 4,

characterised in

that the coupling input part (22) is designed in the shape of a hollow shaft whose inner diameter is greater than the outer diameter of the drive input shaft (9), wherein the hollow shaft is arranged coaxially relative to the drive input shaft (9) and partially axially overlaps same.

6. A drive assembly according to any one of claims 1 to 5,

characterised in

that the coupling output part (26) of the multi-plate coupling (3) is provided in the form of a sleeve which, via a toothed engagement, is connected in a rotationally fast way to the drive input shaft (9) and is axially secured by means of a securing ring (29) against an inner bearing race (31) of the rolling contact bearing (12) at the coupling end.

7. A drive assembly according to any one of claims 1 to 6,

characterised in

that the hollow shaft is rotatably supported by a first bearing (24) in the coupling housing (8) and by a second bearing (32) on the sleeve.

8. A drive assembly according to any one of claims 1 to 7,

characterised in

that the set of coupling plates (16, 18) is supported against a supporting disc (33) connected to the hub (17).

and can be loaded by a pressure disc (36), wherein a setting device (4) is provided for actuating the multi-plate coupling (3) by loading the pressure disc (36).

9. A drive assembly according to claim 8,

characterised in

that the setting device (4) is provided in the form of a ball ramp assembly which comprises two opposed discs (38, 41) with ball grooves (39, 42) whose pitch extends circumferentially in opposite directions, as well as balls (43) held in the ball grooves (39, 42), wherein one of the discs (38) is positioned in the coupling housing (8) in a rotationally fast way and the other disc (41) is rotatably drivable via an electric motor (46) and at least indirectly loads the pressure disc (36).

10. A drive assembly according to claim 9,

characterised in

that the drivable disc (41) is radially centred by the balls (43) relative to the disc (38) arranged in the coupling housing (8).